FINAL REPORT

TO

OFFICE OF NAVAL RESEARCH

DOD Science and Engineering Apprenticeship Program for High School Minorities and Women Summer 1990 Activities

Contract No. N00014-88-J-1159

Principal Investigator: Dr. Richard L. Pfeffer
Director, Geophysical Fluid Dynamics Institute
The Florida State University
Tallahassee, FL 32306
(904) 644-5594

Co-Manager: Dr. Robin J. Kung
Geophysical Fluid Dynamics Institute
Florida State University
Tallahassee, FL 32306
(904) 644-6597

January 1991
The Florida State University
Tallahassee, Florida

1. INTRODUCTION

The summer of 1990 represented the ninth successful DOD Science and Engineering Summer Apprenticeship Program for High School Minority Students sponsored by the Office of Naval Research at Florida State University. The program this year was again administered by the Geophysical Fluid Dynamics Institute (GFDI) under the direction of Drs. Richard L. Pfeffer and Robin Kung. Student activities were centered at GFDI and included work experience in GFDI.

Nine students were selected to work in the summer program. The guidance counselors of five local high schools were approached to obtain the names of outstanding college bound minorities and women. This summer our student group consisted of seven seniors, and two exceptional juniors. The departure from our past concentration on seniors was motivated by our desire to influence and expose students to possible scientific and engineering careers at an earlier age. Brief vitae of the selected students appear in the following section, and information pertaining to each apprentice is also attached at the end of the report.

Students spent a total of 30 hours per week with the program for 10 weeks. They participated in research via data handling and data processing with the aid of computer operated equipment, and in enrichment activities including lectures, laboratory demonstrations, scientific films, a formal course and a weekly discussion session on the history of science using the book *Coming of Age in the Milky Way* by Timothy Ferris. A summary of their activities and projects is included in section 3. A few of the students continued in the program during the Fall semester.

2. STUDENT VITAS

NAME: Darwin Ang

MINORITY: Asian male

HIGH SCHOOL: Florida High

COLLEGE: Florida State University

ANTICIPATED MAJOR: Pre-medicine

AWARDS/SCHOLARSHIPS: Florida Academic Scholarship (1990–1994)

ACTIVITIES/HOBBIES: Tennis, piano, martial arts and reading

NAME: Teresa Hays

MINORITY: Black female

HIGH SCHOOL: FAMU High

COLLEGE: Still in 12th grade

ANTICIPATED MAJOR: Unsure

AWARDS/SCHOLARSHIPS: Honor roll, 1990

ACTIVITIES/HOBBIES: Piano, Teens for Teens (anti-drug club), anti-drug conferences

NAME: Amber Jessup

MINORITY: White female

HIGH SCHOOL: Rickards High School

COLLEGE: Florida State University

ANTICIPATED MAJOR: Biology

AWARDS/SCHOLARSHIPS: National Merit Scholar, Florida Academic Scholar, Governor's College Scholar, Salutatorian at Rickards High School

ACTIVITIES/HOBBIES: Soccer, caving, Brain Brawl

NAME: Vanessa Johnson

Minority: Black female

HIGH SCHOOL: Leon High School

COLLEGE: University of Florida

ANTICIPATED MAJOR: Unsure

AWARDS/SCHOLARSHIPS: University of Florida scholarship (4 years), Presidential Scholarship, Who's Who of American High School Students, Foreign Language Award (State), Leon Foundation Award

NAME: Daria Navon

MINORITY: White female

HIGH SCHOOL: Lincoln High School

COLLEGE: University of Florida

ANTICIPATED MAJOR: Biology/genetics

AWARDS/SCHOLARSHIPS: Who's Who Among American High School Students; Outstanding High School Students of America; 3rd Place in Florida on National French Exam; Outstanding French Student at Lincoln; Florida Academic Scholarship (4 years), Salutatorian at Lincoln High School, Florida Academic Fitness Award, National Merit Commended Scholar.

ACTIVITIES/HOBBIES: Tennis team; National Honor Society; Mu Alpha Theta, French Club (Treasurer); French Honor Society (Vice-President); Society for Global Consciousness (Director); Volunteer Tutoring; Inter-Club Council; Playing piano.

NAME: Chikai Ohayama

MINORITY: Asian male

HIGH SCHOOL: Florida High

COLLEGE: Vanderbilt University

ANTICIPATED MAJOR: Medicine

AWARDS/SCHOLARSHIPS: Vanderbilt Chancellor's Scholarship, Valedictorian of Florida High School, 1990

ACTIVITIES/HOBBIES: Fencing, violin, computers, poetry

NAME: Vivine Owen

MINORITY: Black female

HIGH SCHOOL: FAMU High School

COLLEGE: Still in 12th grade

ANTICIPATED MAJOR: Unsure

AWARDS/SCHOLARSHIPS: Honor roll, Who's Who Among American High School Students, National Merit Scholarship

ACTIVITIES/HOBBIES: Reading, playing piano

NAME: Gina Starr

MINORITY: Black female

HIGH SCHOOL: Lincoln High School

COLLEGE: Emory University

ANTICIPATED MAJOR: Chemistry

AWARDS/SCHOLARSHIPS: Alex Means Scholar, Emory National Achievement Scholar

ACTIVITIES/HOBBIES: Piano, modern philosophy, reading scientific journals, Academic Team.

NAME: John Wang

MINORITY: Asian male

HIGH SCHOOL: Lincoln High School

COLLEGE: Duke University

ANTICIPATED MAJOR: Engineering

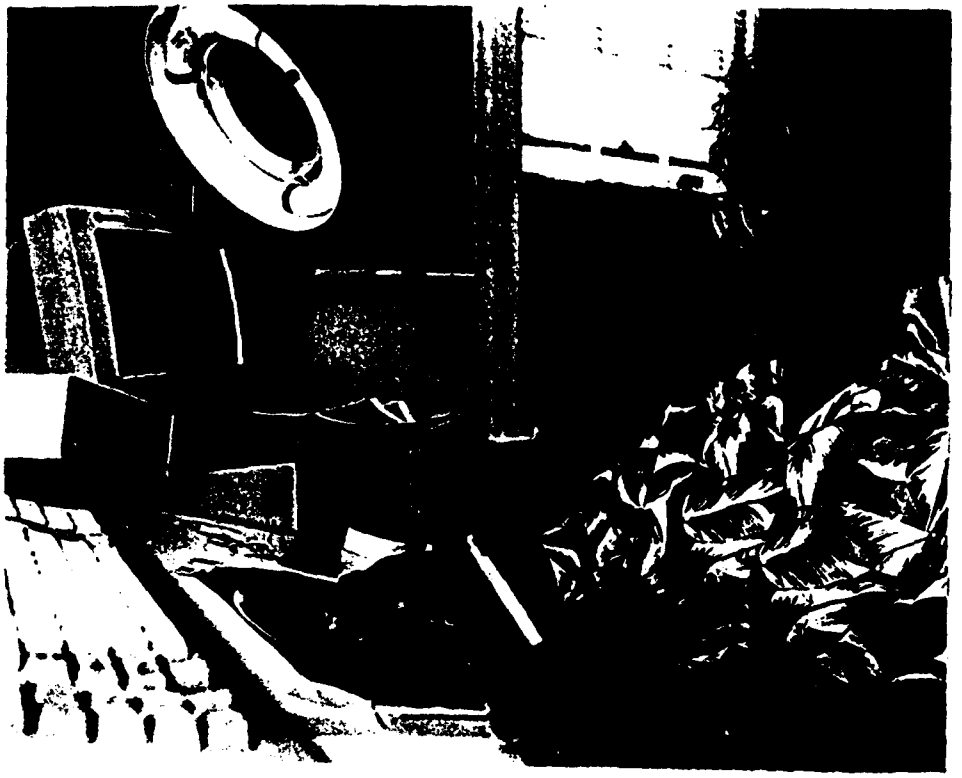
AWARDS/SCHOLARSHIPS: HCA Foundation Scholarship, Duke University Grant, NROTC, AROTC and 3-ROTC, Valedictorian at Lincoln High School.

ACTIVITIES/HOBBIES: Reading, Frisbee

3. WORK PROJECTS OF MINORITY STUDENTS

Eight of the nine students participated in digitizing velocity vector data from photographs of flow fields obtained in laboratory experiments. This activity was part of a larger project on studies of the interaction of bottom topography with overlying baroclinic waves investigated by Drs. R. L. Pfeffer and R. Kung. The students' work was supervised by Mr. Clayton Lewis and assisted by Messrs. Scott Boyles and Gerald Arnold. Two of these individuals are black undergraduates. One of the students participated in the analysis of atmospheric boundary layer data under the supervision of Professor S. Stage in the Meteorology Department. This student plotted data from the Frontal Air-Sea Interaction Experiment (FASINEX). The data show the effects of an oceanic sea surface temperature SST front on the overlying atmosphere. Atmospheric temperature, winds and humidity are each influenced the SST front. The exact details of the influence was very different for the three days analyzed due to different directions between the winds associated with the large scale weather patterns and the SST front.

The major project in which eight of the students participated during the summer was the study of photographic velocity data from laboratory experiments on the interaction of topography with baroclinic waves, and flows with azimuthally varying lower thermal boundary conditions. The majority of their time was spent in digitizing photographs which were recorded in laboratory experiments designed to study the interaction of topography and different thermal boundary conditions with baroclinic waves. The experiments were conducted in a rotating, differentially heated annulus of fluid.



Vivine looks up at the monitor to ensure accuracy of digitized flow vectors.

The data from the experiments were obtained by means of a camera, mounted at the top of the rotating annulus, which recorded the movements of laser-illuminated particles suspended in the fluid. The camera produced a sequence of still photographs, in each of which the movement of every particle appeared as a string of dots. By digitizing the position of these dots and calculating the distance between dots and the orientation of each string of dots, one can determine the velocity field as a function of time. Fourier analyses and energetics calculations of such data provide valuable information about the behavior of baroclinic fluids in the presence of bottom topography.

The students had the opportunity to gain experience in the use of digitizing equipment, personal computers, and video monitors which display the work graphically as it is being digitized. They were also able to see and discuss the results of a first-level analysis of the

Teresa carefully digitizes the vectors on the photograph.

digitized data produced with the DEC VAX computer cluster. During the course of the summer, the students worked with photographs from several different experiments, which allowed them to see effects of variations in experimental parameters such as the difference in temperature between the inner and outer walls of the bath, the speed of rotation, and the presence or absence of topography.

Efforts were made to ensure the students' understanding of the relationships between the theoretical model and observable phenomena, such as the jet stream and ocean currents, which effect the transfer of energy between the earth's equator and poles.

Dr. Pfeffer explains to Amber, Vanessa and Darwin
how to digitize the flow rates and eddies.

4. INSTRUCTION AND ENRICHMENT ACTIVITIES

The instruction and training received by the students concerning their work assignments always went beyond that needed to do the job. An attempt was always made to make their work experience a learning process and an introduction to scientific research. An explanation of the research project, its implications, and the contribution of the student's work to the overall project was always given.

Aside from the students' regular work, a variety of activities were scheduled. Activities included a series of lectures on research topics pertaining to their work and the work of the

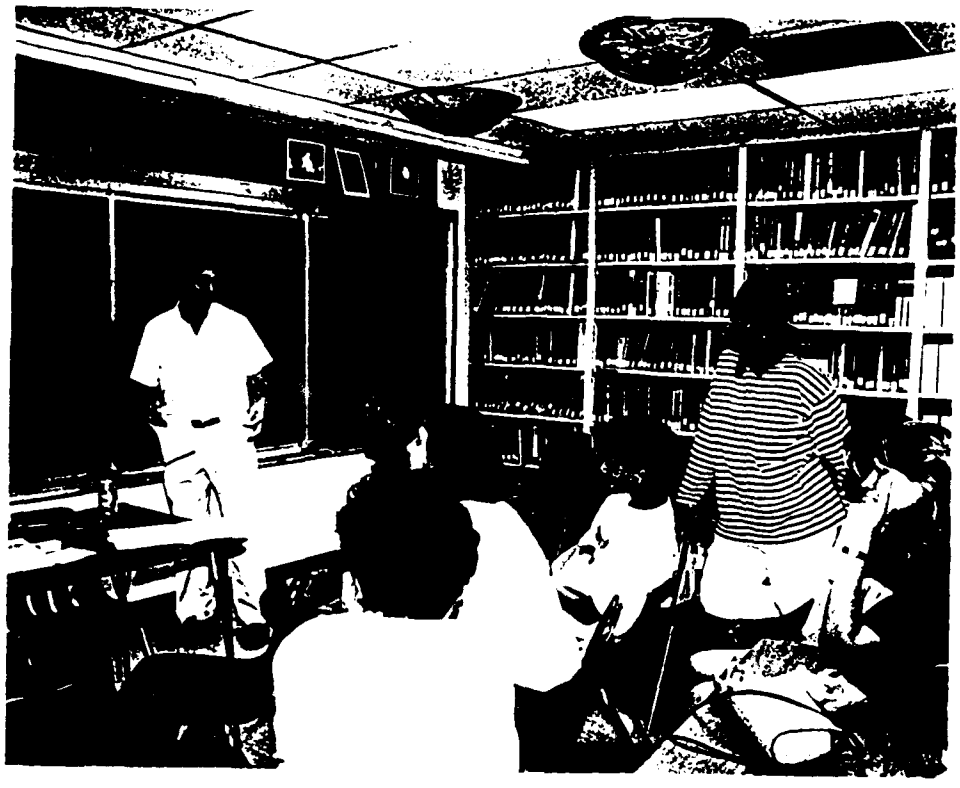
Dr. Kung explains the procedure of
the laboratory annulus experiments.

research staff. Lectures were given by Drs. Buzyna, Nicholson, Pfeffer, Ruby Krishnamurti, Howard, Kung, Blumsack, Fuelberg, Gruender, Stage and Long, and by graduate student David Coulliette. In addition to these, the students were given lectures and discussions with Dr. Pfeffer on *Coming of Age in the Milky Way,* an exciting book on the history of science by Timothy Ferris. A series of educational scientific movies were also shown, such as waves and beaches, meteorology today, stratified flow, turbulence, surface tension, breaking waves and others. A list of these activities is given in Table 1. The students were also given opportunities to experience work in areas outside their main assignments, so that all students could experience each other's work and thus broaden their overall experience.

1990 GFDI Summer Minority Program Enrichment Schedule

MONDAY (Movies)	TUESDAY (Talks)	WEDNESDAY (Discussions)	FRIDAY (Lab Demo.)
11 **JUNE** 12:15 Waves & Beaches (video)	12 12:15 **Robin Kung** Intro. to Rotating Fluid Exper.	13 12:15 **Richard Pfeffer** Coming of Age in the Milky Way	15 12:15 **Robin Kung** Rotating Annulus Experiment
18 12:15 Fluid Dynamics of Drag Part 1 & 2 (B & W)	19 12:15 **Ruby Krishnamurti** Bénard Convection **(Lab. Demo.)**	20 12:15 **Pfeffer** Raising the Roof	22 12:15 **Richard Pfeffer** A discussion of Coriolis force
25 1:00 Fluid Dynamics of Drag Part 3 & 4 (B & W)	26 1:00 **Louis Howard** Continued Fractions	27 1:00 **Pfeffer** The Discovery of the Earth	29 1:00 **David Coulliette** A Model of the Mantle Convection
2 **JULY** 1:00 Meteorology Today (video)	3 1:00 **Henry Fuelberg** Thunderstorm Forecasting	4 1:00 **Pfeffer** The Sun Worshippers	6 1:00 **Krishnamurti** Double-diffusive Instability
9 1:00 Surface Tension (color)	10 1:00 **David Gruender** The Trial of Galileo	11 1:00 **Pfeffer** The World in Retrograde	13 1:00 **Kung** Coriolis Force
16 1:00 Stratified Flow (color)	17 1:00 **George Buzyna** Lab. Exp. of Land Sea Influences	18 1:00 **Pfeffer** Newton's Reach	20 1:00 **Krishnamurti** Thermal Oscillators.
23 1:00 Flow Instability (B & W)	24 1:00 **Steve Blumsack** Intro. to Chaos	25 1:00 **Pfeffer** A Plumb Line to the Sun	27 1:00 **Kung** Taylor Column
30 1:00 Turbulence (color)	31 1:00 **Sharon Nicholson** African Climate Variability	1 **AUGUST** 1:00 **Pfeffer** Deep Space	3 1:00 **Krishnamurti** Rijke Tube
6 1:00 Breaking Waves (B & W)	7 1:00 **Steven Stage** Turb. Mixing in Marine Atmo. B.L.	8 1:00 **Pfeffer** Island Universes	10 1:00 **Kung** Temp. & Velocity Measurements.
13 1:00 Aero. Generation of Sound (B & W)	14 1:00 **Christopher Long** Nuclear Physics at FSU	15 1:00 **Pfeffer** Einstein's Sky	17 1:00 **Krishnamurti**

Time: 12:15 to 1:00 before 6/22/90; 1:00 to 1:45 after 6/25/90



Dr. Steven Blumsack gives a lecture on Introduction to Chaos

Dr. Howard gives a lecture on continued fractions.

This summer the students also benefitted from another enrichment program which included a basic meteorology course given by Professor Jon Ahlquist, in which seven of the students participated. They were given the same homework assignments and exams as the regular college students.

5. CONCLUSION

The summer program was very successful this year. The students were bright, attentive, well-motivated, and willing to work. Aside from the monetary reward, the students related that they benefited a great deal from their summer experience, especially the younger students. They were grateful for the opportunity to work in a scientific environment and acquire new skills and experience. Their contribution to the various projects was also significant. The digitizing work was done carefully and accurately and hence contributed substantially to a much needed data base for further analysis and study. Their work on other projects enabled us to investigate certain aspects we might not have otherwise found time to do or would have to do at some later time.

In general, the students felt financially rewarded and scientifically enriched by their experience in the summer program. We feel that the students acquired a certain maturity and confidence which should be a great asset to them during their final years in high school, college, and their chosen careers.

(Suggested Form)

INFORMATION FOR EACH APPRENTICE

1 NAME Ang (last) Darwin (first)

2 ADDRESS (permanent) 2100 Oreans Drive (street & number) (904) 878-5902 (phone)

Tallahassee (city) FL (state) 32308 (zip code)

2a (school address, '89 - '90, if applicable) Florida High (904) 644-1025 (phone)

B-166 West Call St.

3 LAST GRADE COMPLETED 12th TYPE OF SCHOOL: (x)Public ( )Private

4 SEX (x)Male ( )Female

5 RACE/ETHNICITY: (Voluntary) ( )Black ( )White ( )Hispanic (x)Asian ( ) Other

6 INSTALLATION (name) Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, FL

7 MENTOR (name) Dr. R.L. Pfeffer, Professor and Director / Dr. R.J. Kung, Research Associate (title)

8 PRINCIPAL DISCIPLINE OF RESEARCH Atmospheric Science

9 MAJOR TASKS PERFORMED Digitizing of Velocity Vectors from photographs of Flow fields obtained in Laboratory experiments.

10 HONORS Florida Academic Scholarship

(Suggested Form)

INFORMATION FOR EACH APPRENTICE

1 NAME Hayes (last) Teresa (first)

2 ADDRESS (permanent) 322 Gaile Ave. (street & number) (904) 656-3817 (phone)

Tallahassee (city) Florida (state) 32311 (zip code)

2a (school address, '89-'90, if applicable) FAMU High (904) 599-3325 (phone)

P.O. A19 Tallahassee, FL 32307

3 LAST GRADE COMPLETED 10th TYPE OF SCHOOL: ( )Public (x)Private

4 SEX ( )Male (x)Female

5 RACE/ETHNICITY: (Voluntary) (x)Black ( )White ( )Hispanic ( )Asian ( ) Other

6 INSTALLATION (name) Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, FL

7 MENTOR (name) Dr. R.L. Pfeffer, Professor and Director (title)
Dr. R.J. Kung, Research Associate

8 PRINCIPAL DISCIPLINE OF RESEARCH Atmospheric Science

9 MAJOR TASKS PERFORMED Digitizing of velocity vectors from photographs of flow fields obtained in laboratory experiments.

10 HONORS Honor Roll at FAMU High School

(Suggested Form)

INFORMATION FOR EACH APPRENTICE

1 NAME Jessup (last) Amber (first)

2 ADDRESS (permanent) 2907 Morningside Drive (street & number) (904) 877-7893 (phone)

Tallahassee (city) Florida (state) 32301 (zip code)

2a (school address, '89 - '90, if applicable) Rickards H.S. (904) 488-1783 (phone)

3013 Jim Lee Road

3 LAST GRADE COMPLETED 12th TYPE OF SCHOOL: (X)Public ( )Private

4 SEX ( )Male (X)Female

5 RACE/ETHNICITY: (Voluntary) ( )Black (X)White ( )Hispanic ( )Asian ( ) Other

6 INSTALLATION Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, FL (name)

7 MENTOR Dr. R.L. Pfeffer, Professor and Director; Dr. R.J. Kung, Research Associate (name, title)

8 PRINCIPAL DISCIPLINE OF RESEARCH Atmospheric Science

9 MAJOR TASKS PERFORMED Digitizing of velocity vectors from photographs of flow fields obtained in laboratory experiments.

10 HONORS National Merit Scholar; Florida Academic Scholar; Governor's College Scholar; Salutatorian at Rickards High School

(Suggested Form)

INFORMATION FOR EACH APPRENTICE

1 NAME Johnson (last) Vanessa (first)

2 ADDRESS (permanent) 6237 Quarterhorse Trail (street & number) (904) 893-8958 (phone)

Tallahassee (city) Florida (state) 32308 (zip code)

2a (school address, '89 - '90, if applicable) Leon High School (904) 488-1971 (phone)

550 East Tennessee Street

3 LAST GRADE COMPLETED 12th TYPE OF SCHOOL: (x) Public ( ) Private

4 SEX ( ) Male (x) Female

5 RACE/ETHNICITY: (Voluntary) (x) Black ( ) White ( ) Hispanic ( ) Asian ( ) Other

6 INSTALLATION (name) Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, FL

7 MENTOR (name) Dr. R.L. Pfeffer, Professor and Director; Dr. R.J. Kung, Research Associate (title)

8 PRINCIPAL DISCIPLINE OF RESEARCH Atmospheric Science

9 MAJOR TASKS PERFORMED Digitizing of velocity vectors from photographs of flow fields obtained in laboratory experiments.

10 HONORS University of Florida Scholarship (1990-1994); Presidential Scholarship; Who's Who Among Highschool Students; Foreign Language Award (State); Leon Foundation Award

(Suggested Form)

INFORMATION FOR EACH APPRENTICE

1 NAME Navon (last) Daria (first)

2 ADDRESS (permanent) 3148 Ferns Glen Drive (street & number) (904) 893-7606 (phone)

Tallahassee (city) Florida (state) 32308 (zip code)

2a (school address, '89 - '90, if applicable) Lincoln High (904) 487-2110 (phone)

3838 Trojan Trail

3 LAST GRADE COMPLETED 12th TYPE OF SCHOOL: (x)Public ( )Private

4 SEX ( )Male (x)Female

5 RACE/ETHNICITY: (Voluntary) ( )Black (x)White ( )Hispanic ( )Asian ( ) Other

6 INSTALLATION (name) Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, FL

7 MENTOR (name) Dr. R.L. Pfeffer, Professor and Director; Dr. R.J. Kung, Research Associate (title)

8 PRINCIPAL DISCIPLINE OF RESEARCH Atmospheric Science

9 MAJOR TASKS PERFORMED Digitizing of velocity vectors from photographs of flow fields obtained in laboratory experiments.

10 HONORS Florida Academic Scholarship; Salutatorian at Lincoln High School; Florida Academic Fitness Award; National Merit Commended Scholar; Outstanding French Student at Lincoln High School; 3rd Place in the State of Florida on the National French Exam; Outstanding High School Student of America; Who's Who Among American High School Students; National Honor Society; French Honor Society; Mu Alpha Theta.

(Suggested Form)

INFORMATION FOR EACH APPRENTICE

1 NAME Ohazama (last) Chikai (first)

2 ADDRESS (permanent) 1713 Old Fort Drive (street & number) (904) 878-6739 (phone)

Tallahassee (city) Florida (state) 32301 (zip code)

2a (school address, '89 - '90, if applicable) Florida High School (904) 644-1025 (phone)

B-166 West Call St.

3 LAST GRADE COMPLETED 12th TYPE OF SCHOOL: (X)Public ( )Private

4 SEX ( )Male ( )Female

5 RACE/ETHNICITY: (Voluntary) ( )Black ( )White ( )Hispanic (x)Asian ( ) Other

6 INSTALLATION (name) Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, FL

7 MENTOR (name) Dr. R.L. Pfeffer, Professor and Director
Dr. R.J. Kung, Research Associate (title)

8 PRINCIPAL DISCIPLINE OF RESEARCH Atmospheric Science

9 MAJOR TASKS PERFORMED Digitizing velocity vector data from photographs of flow fields obtained in laboratory experiments.

10 HONORS Vanderbilt Chancellor's Scholarship; Valedictorian of Florida High School, 1990

(Suggested Form)

INFORMATION FOR EACH APPRENTICE

1 NAME Owen (last) Vivine (first)

2 ADDRESS (permanent) 1502 Inwood Drive (street & number) (904) 386-7603 (phone)

Tallahassee (city) FL (state) 32304 (zip code)

2a (school address, '89-'90, if applicable) Famu High (904) 599-3325 (phone)

P.O. Box A19 Tallahassee, FL 32307

3 LAST GRADE COMPLETED 11th TYPE OF SCHOOL: (X)Public ( )Private

4 SEX ( )Male (X)Female

5 RACE/ETHNICITY:(Voluntary) (X)Black__( )White__( )Hispanic__( )Asian__( ) Other

6 INSTALLATION (name) Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, FL

7 MENTOR Dr. R.L. Pfeffer, Professor and Director
Dr. R.J. Kung, Research Associate
(name) (title)

8 PRINCIPAL DISCIPLINE OF RESEARCH Atmospheric Science

9 MAJOR TASKS PERFORMED Digitizing of velocity vectors from photographs of flow fields obtained in laboratory experiments

10 HONORS Honor Roll,1990 at FAMU High School; Who's Who Among High School Students; National Merit Scholarship.

(Suggested Form)

INFORMATION FOR EACH APPRENTICE

1 NAME Starr (last) Gina (first)

2 ADDRESS (permanent) 1508 Davis St. (street & number) (904) 878-129 (phone)

Tallahassee (city) Florida (state) 32311 (zip code)

2a (school address, '89 - '90, if applicable) Lincolan H.S. (904) 487-2110 (phone)

Lincoln H.S., 3838 Trojan Trail

Emory University Atlanta Ga. 30322 Box2B97

3 LAST GRADE COMPLETED 12th TYPE OF SCHOOL: (X)Public ( )Private

4 SEX ( )Male (X)Female

5 RACE/ETHNICITY: (Voluntary) ( )Black ( )White ( )Hispanic ( )Asian ( ) Other

6 INSTALLATION (name) Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, FL

7 MENTOR (name) Dr. R.L. Pfeffer, Professor and Director
Dr. R.J. Kung, Research Associate (title)

8 PRINCIPAL DISCIPLINE OF RESEARCH Atmospheric Science

9 MAJOR TASKS PERFORMED Digitizing of velocity vectors from photographs of flow fields obtained in laboratory experiments

10 HONORS Alex Means Scholar; Emory National Achievement Scholar

(Suggested Form)

INFORMATION FOR EACH APPRENTICE

1 NAME Wang (last) John (first)

2 ADDRESS (permanent) 2409 Cadney Court (street & number) (904) 893-5485 (phone)

Tallahassee (city) Florida (state) 32308 (zip code)

2a (school address, '89 - '90, if applicable) Lincoln (904) 487-2110 (phone)

3838 Trojan Trail

3 LAST GRADE COMPLETED 12th TYPE OF SCHOOL: (x)Public ( )Private

4 SEX (x)Male ( )Female

5 RACE/ETHNICITY: (Voluntary) ( )Black ( )White ( )Hispanic (x)Asian ( ) Other

6 INSTALLATION (name) Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, FL

7 MENTOR (name) Dr. Steve Stage, Associate Professor (title)

8 PRINCIPAL DISCIPLINE OF RESEARCH Meteorology

9 MAJOR TASKS PERFORMED Plotting graphs of the Atmospheric Boundary layer using the computer program on the Microcomputer.

10 HONORS HCA Foundation Scholarship; Duke University Grant; 4-year NROTC; AROTC and 3-year ROTC; Valedictorian of Lincoln High School, 1990

(Suggested Form)

INFORMATION FOR EACH MENTOR

1 NAME: Arnold (last) Gerald (first)

2 INSTALLATION Florida State University, Geophysical Fluid Dynamics Institute
name

(904) 644-6085
phone

3 DATE OF BIRTH March 2, 1967

4 SEX ( ) FEMALE (X) MALE

5 RACE/ETHNICITY: (Voluntary) (X)Black__( )White__( )Hispanic__( )Asian__( ) Other

6 HIGHEST DEGREE EARNED M.A., Graduate Student, Darkroom Technician

7 PRINCIPAL FIELD OF RESEARCH Geophysical Fluid Dynamics

8 NUMBER OF YEARS OF MENTORSHIP 5

9 NUMBER OF APPRENTICES SUPERVISED THIS YEAR, 1990 4

(Suggested Form)

INFORMATION FOR EACH MENTOR

1 NAME: Boyles (last) Scott (first)

2 INSTALLATION Florida State University, Geophysical Fluid Dynamics Institute
name

(904) 644-1262
phone

3 DATE OF BIRTH July 1, 1969

4 SEX ( ) FEMALE (x) MALE

5 RACE/ETHNICITY:(Voluntary) ( )Black__(x)White__( )Hispanic__( )Asian__( ) Other

6 HIGHEST DEGREE EARNED Undergraduate Student, Laboratory Technician

7 PRINCIPAL FIELD OF RESEARCH Geophysical Fluid Dynamics

8 NUMBER OF YEARS OF MENTORSHIP 1

9 NUMBER OF APPRENTICES SUPERVISED THIS YEAR, 1990 9

(Suggested Form)

INFORMATION FOR EACH MENTOR

1 NAME: Kung (last) Robin (first)

2 INSTALLATION Florida State University, Geophysical Fluid Dynamics Institute
name

(904) 644-6597
phone

3 DATE OF BIRTH May 27, 1939

4 SEX ( ) FEMALE (X) MALE

5 RACE/ETHNICITY: (Voluntary) ( ) Black ( ) White ( ) Hispanic (X) Asian ( ) Other

6 HIGHEST DEGREE EARNED Ph.D.

7 PRINCIPAL FIELD OF RESEARCH Geophysical Fluid Dynamics

8 NUMBER OF YEARS OF MENTORSHIP 6

9 NUMBER OF APPRENTICES SUPERVISED THIS YEAR, 1990 9

(Suggested Form)

INFORMATION FOR EACH MENTOR

1 NAME: Lewis (last) Clayton (first)

2 INSTALLATION Florida State University, Geophysical Fluid Dynamics Institute
name

(904) 644-1262
phone

3 DATE OF BIRTH _____

4 SEX ( ) FEMALE (x) MALE

5 RACE/ETHNICITY: (Voluntary) (x)Black ( )White ( )Hispanic ( )Asian ( ) Other

6 HIGHEST DEGREE EARNED A.A., Research Assistant

7 PRINCIPAL FIELD OF RESEARCH Geophysical Fluid Dynamics

8 NUMBER OF YEARS OF MENTORSHIP 2

9 NUMBER OF APPRENTICES SUPERVISED THIS YEAR, 1990 9

(Suggested Form)

INFORMATION FOR EACH MENTOR

1 NAME: Pfeffer (last) Richard (first)

2 INSTALLATION Florida State University, Geophysical Fluid Dynamics Institute
name

(904) 644-5594
phone

3 DATE OF BIRTH November 26, 1930

4 SEX ( ) FEMALE (X) MALE

5 RACE/ETHNICITY: (Voluntary) ( )Black (x)White ( )Hispanic ( )Asian ( ) Other

6 HIGHEST DEGREE EARNED Ph.D.

7 PRINCIPAL FIELD OF RESEARCH Meterology

8 NUMBER OF YEARS OF MENTORSHIP 8

9 NUMBER OF APPRENTICES SUPERVISED THIS YEAR, 1990 9

(Suggested Form)

INFORMATION FOR EACH MENTOR

1 NAME: Stage (last) Steve (first)

2 INSTALLATION Meterology Department (name)

(904) 644-2037 (phone)

3 DATE OF BIRTH _____

4 SEX ( ) FEMALE (X) MALE

5 RACE/ETHNICITY: (Voluntary) ( )Black (X)White ( )Hispanic ( )Asian ( ) Other

6 HIGHEST DEGREE EARNED Ph.D.

7 PRINCIPAL FIELD OF RESEARCH Meteorology

8 NUMBER OF YEARS OF MENTORSHIP 1

9 NUMBER OF APPRENTICES SUPERVISED THIS YEAR, 1990 1